

REMARKS

Claims 6, 19 to 21, and 23 to 30 as set forth in Appendix I of this paper are herewith presented for further prosecution. Relative to the previous version of the claims, Claims 4, 5, 16 to 18 and 22 have been canceled, and Claims 6, 19 to 21, 23 to 25, 29 and 30 have been amended, as indicated in the listing of the claims.

More specifically, applicants have amended Claim 6 to recite the elements of Claim 16 previously incorporated into Claim 6 by reference to Claim 16. Also, Claims 19 to 21, 23 to 25, 29 and 30 have been amended to depend upon Claim 6 instead of Claim 16. The changes in the claims do not introduce new matter. Favorable consideration is respectfully solicited.

Claims 6, 16, 17, 19 to 21, 23 to 25 and 27 to 30 were rejected under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Müller et al.* (US 6,159,992) when taken in view of the disclosure of *von Deyn et al.* (US 2002/025910). For the following reasons the rejection is deemed to be based on error, and is deemed to be inapplicable to the subject matter of the claims presented herewith.

*“Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.”*²⁾ When the scope and the contents of the prior art is determined, it is *inter alia* necessary that the references be considered as a whole, and that the references be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.³⁾ *“Often, it will be necessary ... to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine known elements in the fashion claimed by the patent at issue.”*⁴⁾ Accordingly, obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.⁵⁾ It is insufficient that the prior art discloses the elements

2) *Graham v. John Deere*, 383 U.S. 1, at 17 – 18 (1966). Cf. *KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398 (2007).

3) *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5 (Fed. Cir. 1986).

4) *KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398 (2007).

5) *Carella v. Starlight Archery*, 804 F.2d 135 (Fed. Cir. 1986); *In re Laskowski*, 871 F.2d 115 (Fed. Cir. 1989).

of the claimed invention, either separately or used in other combinations; there must be some teaching, suggestion, or incentive to make the combination that was made by the inventor.⁶⁾ Moreover, the fact that elements which are independently described in the prior art are combined such as to work together in an unexpected and fruitful manner is an indicia of non-obviousness.⁷⁾

Applicants' claims pertain to a method for increasing the resistance of crops plants to the phytotoxicity of crop protection products wherein the crop plants, their seed or soil are(is) treated with an effective amount of a compound of formula (III) such as, e.g., pyraclostrobin, together with at least one herbicide such as, e.g., [3-(4,5-dihydroisoxazol-3-yl)-4-methanesulfonyl-2-methylphenyl]-(5-hydroxy-1-methyl-1H-pyrazol-4-yl)methanone. The very particular result which is obtained in accordance with applicants' method is, e.g., illustrated by the experiments described in the application and the data set forth in Tables 2a and 2b on page 24 of the application, as well as the supplemental experiments and data described in Dr. Brahm's Declaration which is presented herewith.

The data compiled in the tables on page 24 of the application illustrate, in particular, that the method selectively increases the resistance of crop plants without significantly diminishing the desired phytotoxic effect of the herbicide against unwanted plants. For example, when applied alone the herbicides B and C damaged rice plants to an extent of 20% and 10% while achieving a 90% control of the unwanted plant barnyard grass and a 98% control of the unwanted plant morning glory. However, when the herbicides B and C were applied in combination with an effective amount of a compound of formula (III) such as, e.g., pyraclostrobin, no damage of the rice plants was observed although the control of the unwanted plants remained at 90% and 98%, respectively. Similarly, the herbicide C when applied alone damaged spring wheat to an extent of 20-30% when controlling the unwanted plants pigweed and morning glory to 98%. In contrast thereto, when the herbicide C was applied in combination with an effective amount of the compound of formula (III) the damage to spring wheat was reduced to 0 or 15% while the control of the unwanted plants remained at 98%.

In addition to the beneficial effects on rice and spring wheat, the investigations described in Dr. Brahm's Declaration show beneficial effects which are achieved in the treatment of soybeans and corn. Tables 1 and 2 on page 3 of the Declaration, e.g., show that the herbicide glyphosate when applied alone caused a 27.1% reduction of the fresh shoot weight and a 31.4% reduction of the dry shoot weight. In contrast thereto, the fresh shoot weight increased by 1.8% and the dry

6) *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931 (Fed. Cir. 1990), cert. denied 498 U.S. 920 (1990).

7) *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

shoot weight increased by 7.9% when the herbicide was applied in combination with an effective amount of the compound of formula (III) in accordance with applicants' method. Similarly, the tables on page 5 of the Declaration show that the herbicide glyphosate when applied alone not only caused a reduction of the plant height by 17.75 and 12.09%, respectively, but also reduced the fresh biomass by 8.9% and the dry biomass by 1.97%. In contrast thereto, the application of the herbicide in combination with a compound of formula (III) in accordance with applicants' method resulted in an increase in plant height by 1.8 and 27.14%, respectively, and in an increase in fresh and dry biomass by 9.8% and 16.72%, respectively.

The teaching of *Müller et al.* pertains to a mixture of certain carbamates and anilides which yields synergistic fungicidal properties, *see, e.g.*, Abstract. Col. 3, indicated lines 5 to 10, of the reference points out that it is preferred to employ the pure carbamates and anilides although further active ingredients against harmful fungi, or against other pests, or herbicidally active ingredients, growth regulators or fertilizers may be added. The allegation that, according to the *Müller et al.* reference, “[i]t is preferred that further active ingredients are admixed that are herbicidal (column 3, lines 5-10)[,]” *see* Office action page 5, lines 1 to 3, thus, is in error. *Müller et al.* merely contemplate the possibility that further active ingredients such as fungicides, insecticides, arachnidicides or nematocides, or else herbicides, growth regulators or fertilizers, may be admixed, whereas preference is given to employing the pure carbamates (I) and anilides (II). Notable, also, the teaching of *Müller et al.* is silent as to any particular effects of an admixture of the carbamates and anilides with any one of the further active ingredients.

The disclosure of *von Deyn et al.* provides for certain benzoyl compounds and their use for controlling undesirable plants, *see, e.g.*, Abstract. Col. 126, indicated lines 60 to 64, of the reference explains that the benzoyl compounds may be admixed with herbicides or growth regulating agents to widen the spectrum of action or to achieve synergistic effects. The carbamates and anilides of *Müller et al.* are described as fungicides, and the respective remarks of *von Deyn et al.*, thus, cannot suggest any particular properties which may arise from a combination of one of *von Deyn et al.*'s benzoyl compounds and a carbamate and/or anilide of *Müller et al.* Additionally, *van Deyn et al.* explain in col. 127, indicated lines 20 to 28, that it may be advantageous to apply the benzoyl compounds in form of a mixture with other crop protection agents, *e.g.*, pesticides or agents for controlling phytopathogenic fungi or bacteria, and that non-phytotoxic oils and oil concentrates can be added. The allegation that, according to the *von Deyn et al.* reference, “[i]t is advantageous to combine the compounds with additional crop protection agents, including those used for controlling phytopathogenic fungi with non-phytotoxic oils (column 127, lines 20-29)[,]”

see Office action page 4, line 21, to page 5, line 2, thus, also is in error. *Von Deyn et al.* merely state that it “*may be advantageous*” to add other crop protection agents. The reference fails, however, to suggest or imply which type of advantage may be gained. Even more pertinently, the reference lacks any indication as to which factors determine whether an advantage may be gained at all.

The teaching of *Müller et al.* and the disclosure of *von Deyn et al.*, at best, corroborate that the mixture of carbamate and anilide may be employed in combination with other crop protection agents, and that the same applies to the benzoyl herbicides. However, neither one of the references suggests or implies any particular properties of a combination of a fungicide and a herbicide. More specifically, the references considered together fail to suggest or reasonably imply the possibility to increase the resistance of crop plants to the phytotoxic effects of a herbicidal crop protection agent by applying an effective amount of a carbamate corresponding to applicants’ formula (III) together with the herbicidal crop protection agent. As previously noted by applicants, it is well settled that not only the materials which are used and the nature of the specific process which is employed but also the particular result which is obtained must be considered when determining whether a claimed method is obvious within the meaning of Section 103,⁸⁾ and the fact that elements which are independently described in the prior art are combined such as to work together in an unexpected and fruitful manner is an indicia of non-obviousness.⁹⁾ The elements which are independently described in the prior art, i.e., the carbamates (III) and the herbicidal agents, clearly work together in an unexpected and fruitful manner when they are combined in manner delineated in applicants’ claims.

The rejection asserted that “[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of *Müller et al.* [sic] and *Deyn et al.* [sic] to utilize a combination of pyraclostrobin and [3-(4,5-dihydroisoxazol-e-yl)-methanesulfonyl-2-methylphenyl]-(5-hydroxy-1-methyl-1H-yrazole-4-yl) [sic]. One would have been motivated to combine the two ingredients because *Deyn et al.* [sic] teach that [3-(4,5-dihydroisoxazol-e-yl)-methanesulfonyl-2-methylphenyl]-(5-hydroxy-1-methyl-1H-yrazole-4-yl) [sic] is advantageously combined with fungicides and that non-phytotoxicity is important in formulating the end product[.]” see Office action page 5, lines 5 to 12, emphasis added. Again, *von Deyn et al.* merely state that it may be advantageous to admix the herbicidal benzoyl derivatives with further crop protection agents without, however, suggesting or even implying that such an admixture necessar-

8) *In re Dillon*, 919 F.2d 688, 695 (Fed. Cir. 1990) (*en banc*), cert. denied, 500 U.S. 904 (1991).

9) *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

ily will be advantageous, which advantages –if any– may reasonably be expected to result, or which type of other crop protection agent other than herbicides and growth regulators may reasonably be expected to yield advantageous results. Since the disclosure of *von Deyn et al.* pertains to herbicides, i.e., compounds which are necessarily phytotoxic, the reference also cannot corroborate that non-phytotoxicity is important in formulating the end product.

For at least the foregoing reasons, the rejection is based on error, and does not apply to the subject matter of the claims presented herewith.

It is noted that the rejection criticized applicants' showing on page 24 of the application as failing to be commensurate in scope with the claims, and as allegedly not being a proper side-by-side comparison because the effect of the compound (II-5) was not documented, *see* Office action page 6, lines 19 to 21. As to the former applicants respectfully refer to the supplemental data and showings made in Dr. Brahm's Declaration which is presented herewith. Notably, applicants' showings involved a group of structurally diverse and unrelated herbicidal compounds, and the effects, thus, may reasonably be extrapolated from the data proffered by applicants to the realm of the phytotoxic crop products referenced in applicants' claims. Moreover, the compounds (III) are closely related in structure and in activity. A person of ordinary skill in the pertinent art, therefore, can reasonably extrapolate applicants' data to the entire scope of applicants' claims.

As regards the latter criticism, it is respectfully urged that the data on page 24 of the application show the crop-plant selective increase in the resistance against the phytotoxicity which is achieved in accordance with applicants' method even though the effect of the compound (II-5) is not documented.

The phytotoxicity set forth in the tables on page 24 of the application is evaluated using a scale of from 0 to 100 where 0 means no damage and 100 means complete destruction of at least the aerial parts of the plant, *see* application page 23, lines 33 to 35. Accordingly, the compound (II-5) at the respective application rate either does not damage the plant, i.e., the phytotoxicity is 0, or it damages the plant in which case the phytotoxicity is greater than 0 and at most 100. If the phytotoxicity of the compound (II-5) to the rice or the spring wheat plants at the application rate in question were 0, then the application of (II-5) and the documented amounts of the herbicide B or C in combination would be expected to result in the same damage that is caused when the respective amount of the herbicide B or C is applied alone. Under those circumstances, the damage to rice of the combination would be expected to be 20 or 10%, respectively, and the damage to spring wheat would be expected to be 30, 25 or 20%, depending on the application rate of the herbicide C. On the other hand, if the phytotoxicity of the compound (II-5) were greater than 0

but at most 100, then the application of (II-5) and the documented amounts of the herbicide B or C in combination would be expected to result in more damage to the crop plant than is caused when the respective amounts of the herbicide B or C are applied alone. The actual phytotoxicity of the compound (II-5) in accordance with the investigation described in the application can only be from 0 to 100. Thus, the phytotoxicity of a combined application of the compound (II-5) and the herbicides, theoretically, is *at least* that of the herbicides when applied alone. Contrary to what can reasonably be expected, the combined application of the compound (II-5) and the herbicide B or C reduced the phytotoxic effects, i.e., the phytotoxicity of the combined application, in all cases, was lower than the phytotoxicity of the herbicide when applied alone. The fact that applicants failed to document the phytotoxicity of the compound (II-5) when applied alone, therefore, cannot be deemed to render the data insufficient to corroborate the resistance-increasing effects which are achieved in accordance with applicants' method.

In light of the foregoing and the attached it is respectfully urged that the subject matter of Claims 6, 19 to 21, 23 to 25, 29 and 30 is patentable over the teaching of *Müller et al.* when taken in view of the disclosure of *von Deyn et al.*

The subject matter of the previous version of applicants claims, also, was subject to a restriction requirement based on the argument that the structures encompassed different classes and subclasses and may or may not include heterocyclic compounds, concluding "*the compounds are seen as independent and distinct*," see Office action page 2, lines 10 to 14.

It is respectfully urged that the claimed invention is a method of using certain compounds to achieve a particular result rather than compounds *per se*. 35 C.F.R. §121 states *inter alia* "*If two or more independent and distinct inventions are claimed in one application, the Director may require the application to be restricted to one of the inventions.*" The focus of a determination of independence and distinctness, thus, is on the invention which is claimed rather than on a single element of the claimed invention. Whether the compounds which are employed in accordance with the claimed method are independent and/or distinct, or whether those compounds may fall within different classes and subclasses, is not deemed to be determinative as to whether applicants' claims are drawn to independent and distinct inventions. Again, the statute as well as Rule 141 refers to "distinct and independent inventions" and not to isolated elements thereof.

Moreover, *restriction is never proper* where *inventions* are related as disclosed and are not distinct as claimed, see MPEP §806.

Inventions are unrelated if there is *no disclosed relationship* between the two or more inventions claimed, that is, the claimed inventions are unconnected in design, operation and effect, *see* MPEP §802.01.I. It is respectfully urged that the embodiments of applicants' method which are encompassed by the claims are clearly disclosed as being connected in design, in operation, and in effect in that applying effective amounts of a compound (III) together with a herbicidal agrochemical increases the resistance of crop plants to the phytotoxicity of the phytotoxic agrochemical. As such, the embodiments of applicants' invention at least are related inventions.

Related inventions are distinct if the inventions *as claimed* are not connected in at least one of design, operation, or effect (e.g., can be made by, or used in, a materially different process) and wherein at least one invention is patentable (novel and nonobvious) over the other (though they may each be unpatentable over the prior art), *see* MPEP §802.01.II. Again, the subject matter as claimed is clearly connected in design, in operation, and in effect in that the claimed methods require that effective amounts of a certain compound (III) be applied together with a herbicidal agrochemical to increase the resistance of crop plants to the phytotoxicity of the phytotoxic agrochemical. As such, the embodiments of the claimed method are not distinct as claimed.

The inventions encompassed by applicants' claims, therefore, are related as disclosed and are not distinct as claimed. Accordingly, a restriction of the claims is improper. It is respectfully requested that the restriction requirement be withdrawn. Favorable action is solicited.

CONCLUSION

For at least the foregoing reasons, the claims presented herewith are deemed to be in proper form, and are patentable under the provisions of Sections 103(a). Therefore, the application is considered to be in good condition for allowance. Favorable action is respectfully solicited.